

Name: _____

ANIMALS: STRUCTURE AND FUNCTION UNIT TEST

PART A: MULTIPLE CHOICE

Identify the letter of the choice that best completes the statement or answers the question by circling it.

[K/U] 10 Marks

1. Which of the following is NOT a part of the mammalian digestive system?

- a) esophagus
- b) crop**
- c) stomach
- d) small intestine
- e) large intestine

2. Which of the following is NOT true of the pancreas?

- a) Production of bile salts**
- b) Secretes bicarbonate ions to neutralize the chyme released by the stomach
- c) Regulates blood sugar level in the body
- d) Connected to the duodenum
- e) Glucose conversion into glycogen and vice versa

3. Which of the following is NOT true of the villi found in the small intestine?

- a) They greatly increase the surface area of the intestine.
- b) They contain small arteries and veins.
- c) They contain lacteals.
- d) They are themselves lined with microvilli.
- e) The secret digestive juices.**

4. Which of the following leads to inspiration?

- a) The diaphragm moves upward and the ribs move upward
- b) The diaphragm moves upward and the ribs move downward
- c) The diaphragm moves upward and the ribs remain stationary
- d) The diaphragm moves downward and the ribs move upward**
- e) The diaphragm moves downward and the ribs move downward

5. All complex organisms require which of the following to accomplish successful gas exchange?

- a) gills
- b) lungs
- c) a moist membrane**
- d) moist skin
- e) freely permeable cell membranes

6. Which of the following is not commonly included as part of the processes involved in respiration?

- a) Air enters and leaves the lungs.
- b) Oxygen and carbon dioxide are exchanged between the air and the blood.
- c) Oxygen and carbon dioxide are exchanged between the blood and cells.
- d) ATP is produced within the body cells.**
- e) Carbon monoxide combines with haemoglobin in the red blood cells

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7. Red blood cells contain the following protein which facilitates the binding of oxygen.

- a) hematonin
- b) hemoglobin**
- c) hemoglubeen
- d) hermatome
- e) hemonorm

8. Which of the following is not true concerning capillaries?

- a) They are the site of exchange between the blood and body cells.
- b) They have walls that are only one cell layer thick
- c) Blood flow into them is controlled by sphincters.**
- d) Their diameter is so small that red blood cells must move through them in single file.
- e) They facilitate internal respiration

9. Which of the following statements is true with respect to the mammalian heart?

- a) All the blood leaving the heart via the arteries is oxygenated .
- b) All the blood entering the heart via the veins is deoxygenated.
- c) The blood leaving the heart via the coronary arteries is deoxygenated.
- d) The blood entering the heart via the pulmonary veins is oxygenated.**
- e) The blood leaving the heart via the systemic arteries is deoxygenated

10. Which of the following diseases and disorders affect the digestive system?

- a) asthma
- b) ulcers**
- c) sickle-cell anaemia
- d) emphysema
- e) arteriosclerosis

[T/I] 5 Marks

11. A person who has a mutation in the gene that codes for the enzyme pepsinogen will have difficulty digesting which of the following food?

- a) bread
- b) salad
- c) apple
- d) steak**
- e) rice

12. You notice your friend who is lactose intolerant, taking a pill before eating an ice cream cone. The pill most likely:

- a) contains an antacid compound that neutralizes the stomach acid
- b) contains insulin that helps to absorb glucose
- c) contains an enzyme that helps to break down a particular type of sugar molecule**
- d) contains an enzyme that helps to break down protein
- e) contains vitamins

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13. Scientists have noticed that people who live in high altitudes tend to have higher concentration of red blood cells than the people that live in lower altitudes. This is most likely due to:

- a) higher rate of mutation due to the increased exposure to UV radiation at higher altitudes
- b) the lower concentration of oxygen gas at higher altitudes**
- c) the higher concentration of oxygen gas at higher altitudes
- d) the relatively lower average temperature at higher altitudes
- e) the relatively higher average temperature at higher altitudes

14. Thrombocytopenia is a condition where there is a relative DECREASE in the number of platelets in the blood. What type of symptom would you expect that a patient with thrombocytopenia would exhibit?

- a) shortness of breath
- b) frequent illness due to decreased immune response
- c) frequent nosebleeds and/or bleeding gums**
- d) increased blood pressure
- e) decreased blood pressure

15. How could you determine whether a patient has a type I or a type II diabetes?

- a) Measure the blood glucose level of the patient
- b) Measure the urine glucose level of the patient
- c) If the blood glucose level drops after an injection of insulin, the patient has a type I diabetes**
- d) If the blood glucose level drops after an injection of insulin, the patient has a type II diabetes
- e) The only way to determine is through genetic screening

PART B: SHORT ANSWERS

Answer the following questions in the space provided below.

16. What do microvilli, alveoli and the capillary have in common? Why are these structures essential in their respective organ systems? **[T/I] 2 Marks**

**They all increase the surface area where exchange of gases and/or nutrients can occur.
The increase in surface area allows gas exchange and nutrient absorption to occur efficiently**

17. Describe in detail the movement of blood through the heart, beginning at the right atrium.
[K/U] 4 Marks, [C] 5 Marks

**From the right atrium blood enters the right ventricle through the tricuspid valve, from which it is pumped through the semilunar valves into the pulmonary artery.
The blood returns to the heart from the lungs via the pulmonary veins into the left atrium, and then enters the left ventricle through the mitral valve. From the left ventricle, the blood is pumped through the aortic valve into the aorta to be pumped throughout the body**

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18. Explain why exposure to carbon monoxide gas is so dangerous and can lead to death if left untreated.

[A] 2 Marks

Carbon monoxide molecule binds stronger to haemoglobin than oxygen molecules, thereby preventing the oxygen molecules from binding to the haemoglobin. This dramatically decreases the oxygen level in the blood, which can lead to brain damage and death if untreated.

19. Wine stains on clothing or carpets are hard to remove with regular detergent and soap, but special detergents that contain enzymes can make it easier to remove these stains. Using your knowledge of digestive enzymes, explain a possible mechanism by which these special detergents help to remove organic stains. **[A] 2 Marks**

The enzyme in the detergent helps to break down the organic molecules in the wine, making it easier to remove from the fabric.



20. Choose EITHER the digestive OR the circulatory system and using the appropriate scientific terminology, explain in detail the structure and the function of the system. Make sure that you mention the organs in the system, their function, and the overall function of the organ system.

[K/U] 10 Marks, [C] 5 Marks

Digestive system: Overall function is to break down food and absorb the nutrients, and expel the waste

- teeth mechanically break down food,
- saliva lubricates and break down carbohydrates
- esophagus passes food down to the stomach
- stomach releases hydrochloric acid and other enzymes, churns food around physically
- duodenum passes food down to the small intestine, is where enzymes and bile are added
- pancreas produces enzymes and other proteins such as insulin
- liver produces bile that aids in the breakdown of fat
- small intestine absorbs nutrients
- large intestine absorbs water and expel waste

Circulatory System: Overall function is to pump and circulate blood around the body in order to provide oxygen and nutrients, while taking out carbon dioxide and other waste products

- heart pumps the blood to lungs and to the rest of the body
- aorta is the largest artery that is located just above the heart
- arteries carry blood away from the heart to the body
- arteries branch out and become smaller arterioles
- arterioles further branch out to eventually become capillaries, where gas exchange occurs
- capillaries become venules, which eventually become the vein
- veins bring the blood back to the heart, using muscular contractions and valves that prevent backflow

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Unit Test Analysis

Q#	Q Type	Ministry Expectation	K/U	T/I	C	A
1	MC	E3.2	X			
2	MC	E3.2	X			
3	MC	E3.2	X			
4	MC	E3.1	X			
5	MC	E3.1	X			
6	MC	E3.1	X			
7	MC	E3.3	X			
8	MC	E3.3	X			
9	MC	E3.3	X			
10	MC	E3.4	X			
11	MC	E3.2		X		
12	MC	E3.2		X		
13	MC	E3.3		X		
14	MC	E3.3, E3.4		X		
15	MC	E3.2, E3.4		X		
16	Short Answer	E3.1, E3.2, E3.3		X		
17	Short Answer	E2.1, E3.3	X		X	
18	Short Answer	E3.1, E3.3				X
19	Short Answer	E3.2				X
20	Long Answer	E2.1, E3.2, E3.3	X			X